

REMARKS:

- 1) The original application text was based on a direct translation of a corresponding Japanese text. A few clerical and editorial corrections have now been made by amendment in the specification and abstract, without introducing any new matter. Furthermore, excessive detailed text has been moved from the "Summary of the Invention" section to the "Detailed Description" section of the specification and has been slightly editorially revised, and a new shorter Summary of the Invention text has been inserted. Entry of the amendments is respectfully requested.

- 2) The claims have been amended as follows.

The original claims were based on a direct translation of corresponding Japanese claims. Claims 1, 2, 4, 8 and 12 have now been amended in an editorial, stylistic, and formal manner to adapt the claims to more-typical US claim style and format. Also, these claims have been expressly directed to a combination including both a receptacle connector and a plug connector. The editorial clarifications are supported by the original disclosure of the respective claims as well as the drawings and the corresponding written description, without new matter.

Claims 3, 5 to 7 and 9 to 11 have been canceled to avoid improper dependency sequencing.

New claims 13 to 19 have been introduced, to present the subject matter of original claims 3, 5 to 7 and 9 to 11 in proper dependency sequence and with editorial revision.

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Further new claims 20 to 25 have been drafted "from the ground up" as a fresh approach at covering the inventive subject matter with somewhat different claim style, format and terminology in comparison to the original translated claims.

The new claims 13 to 25 are supported by the original disclosure as shown in the following table and do not introduce any new matter.

New Claims	13	14	15	16	17
Original Support	Cl. 6	Cl. 10	Cl. 3	Cl. 7	Cl. 11

New Claims	18	19	20	21	22
Original Support	Cl. 5	Cl. 9	Cl. 1, 5	Cl. 1	Cl.2; Figs.1-7

New Claims	23	24	25
Original Support	Cl. 2; Fig. 6	Cl. 3	Cl.9

Entry and consideration of the claim amendments and new claims are respectfully requested.

- 3) Referring to section 1 on page 2 of the Office Action, the objection to the disclosure has been addressed in the present amendment. The abstract has been shortened. The specification, abstract and claims have been amended in an editorial manner to improve the use of idiomatic standard English. A new brief Summary of the Invention has been introduced at page 3 line 2, and the former more-detailed text from pages 3 to 7 has instead been editorially revised and moved to the Detailed Description

at page 27. In view of these editorial corrections, withdrawal to the objection of the disclosure is respectfully requested.

- 4) Referring to section 2 on pages 2 to 3 of the Office Action, the objection to claims 1 to 12 for various informalities has been addressed in the present amendment. The claims have been amended as necessary to avoid making "assumptions". For example, amended claim 1 now expressly recites a depth direction, a width direction and a thickness direction for reference purposes. The claims have also been amended to consistently define the intended inventive combination including both a plug connector and a receptacle connector. Confusing or non-standard English terminology and sentence construction have been avoided in the amended claims. The dependency sequence has been corrected by canceling claims 3, 5 to 7 and 9 to 11 and instead introducing new replacement claims 13 to 19 in a different sequence. In view of the present amendments, withdrawal of the objection to claims 1 to 12 is respectfully requested.
- 5) It is noted that original claims 9 to 12 were not rejected on prior art grounds. The substantively patentable subject matter of original claims 9 to 12 has been maintained in present amended claim 12 as well as new claims 14, 17 and 19 respectively based on prior claims 10, 11 and 9. Thus, present claims 12, 14, 17 and 19 should be recognized as defining allowable subject matter.
- 6) Before particularly addressing the prior art rejections and comparing the reference disclosures to the present claims, the

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most pertinent claimed subject matter will first be summarized to provide a background.

Present amended independent claim 1 is directed to a combination including a receptacle connector and a plug connector that are to be connected to each other. Furthermore, in the claimed combination, the plug connector is connected to an electric wire or a flat type flexible cable. Thus, the present combination is for connecting the electric wire or flat type flexible cable to a counterpart member, such as a circuit board, through the established connection of the receptacle connector and the plug connector. The plug connector has a substantially rectangular shape and includes a plug width fitting face that faces outward in the width direction and a plug depth fitting face that faces outward in the depth direction, respectively at two locations spaced from each other in the width direction. The receptacle connector includes a body bounding a receptacle groove adapted to receive the plug connector, and a pair of latch arms extending outward in the depth direction from the receptacle connector body, such that the latch arms are spaced apart from one another and able to deform elastically in the width direction. The latch arms are provided with retaining parts that each have a receptacle width fitting face that faces inward in the width direction and can cooperate with the plug width fitting face of the plug connector, as well as a receptacle depth fitting face that faces inward in the depth direction and can cooperate with the plug depth fitting face of the plug connector.

Present independent claim 20 is directed to an electrical connection arrangement for connecting a flexible conductor to an,

article, e.g. such as a circuit board. This connection arrangement comprises a combination including a receptacle connector and a plug connector. The receptacle connector includes a receptacle body, two latch arms extending in a depth direction from the receptacle body, and retaining parts provided on free ends of the latch arms. Each retaining part includes a first retaining face that faces toward the receptacle body in the depth direction. The plug connector is adapted to be connected to the flexible conductor and comprises a plug body comprising an insulating plug body part and having two first engaging faces that face away from a forward plug end and the receptacle body in the depth direction and that are engaged by the first retaining faces of the receptacle connector when the forward plug end is inserted into the socket of the receptacle connector.

- 7) Referring to section 4 on page 3 of the Office Action, the rejection of claims 1, 2, 5 and 6 as anticipated by US Patent 5,395,262 (Lwee) is respectfully traversed.

In comparison to the invention of present claim 1, Lwee does **NOT** disclose a combination including a receptacle connector and a plug connector. Instead, Lwee discloses a receptacle-type connector provided to receive and engage the edge of a circuit board, particularly a daughter board that is to be mounted on a mother board by the connector (see abstract; col. 1, lines 10 to 52; col. 2, lines 5 to 30; col. 3, lines 28 to 45). Lwee does not disclose a plug connector at all. Instead, the board edge of the daughter board itself is to be engaged with the receptacle-type connector.

Further in comparison to the invention of present claim 1, Lwee does **NOT** disclose a plug connector that is connected to an electric wire or flat type flexible cable. To the contrary, as mentioned above, Lwee does not disclose a plug connector at all, but instead discloses a rigid daughter circuit board that is to be directly connected or plugged-in to the receptacle-type connector mounted on the mother circuit board. For this reason, the arrangement of Lwee also would not have been suitable or adaptable to a combination including a plug connector connected to an electric wire or a flat type flexible cable, because there are no disclosed structures suitable for connection to such a flexible conductor.

Still further contrary to the invention of present claim 1, Lwee does **NOT** disclose that the latch arms and associated retaining parts (40, 44, 48) of the receptacle connector include a receptacle depth fitting face that faces inward in the depth direction and is adapted to cooperate with a plug depth fitting face of a plug connector that faces outward in the depth direction. In this regard, the depth direction is defined as the direction in which the latch arms extend outward from the connector body of the receptacle connector, i.e. in the Y-direction perpendicular to the plane of the mother board (1) in the arrangement according to Lwee (see Fig. 1). Instead, it is not the width-wise deflectable latch structures (40, 44, 48), but rather additional plastic latch-post arrangements (26, 28, 30, 30a) of the connector body that are used by Lwee for engaging and holding the daughter board (2) in the depth direction (see col. 4, lines 1 to 14). The metal latch members (40) only hold

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the daughter board in the width direction therebetween (see col. 4, lines 32 to 44), and in the thickness direction (col. 4, lines 60 to 68), but not in the depth direction.

Contrary to present independent claim 20, Lwee does **NOT** disclose an electrical connection arrangement including both a receptacle connector and a plug connector. Rather, Lwee does not disclose a plug connector at all. Also, Lwee does not disclose an electrical connection arrangement for connecting a flexible conductor to an article through a receptacle connector and a plug connector, but rather merely discloses a receptacle-type connector for receiving the board edge of a daughter circuit board to be connected thereby directly to a mother circuit board. See the above discussion of Lwee.

Further contrary to present claim 20, Lwee does **NOT** disclose a plug body that includes two first engaging faces as presently recited, and latch arms of the receptacle connector including retaining parts with first retaining faces that face toward the receptacle body in the depth direction and engage the first engaging faces when the plug connector is engaged with the receptacle connector. Instead, as discussed above, the plastic latch-post arrangements (26, 28, 30, 30a) of Lwee are provided to hold the daughter board (2) in the depth direction. The widthwise deflectable latch arms (40, 44, 48) do not hold or engage any portion of the daughter board in the depth direction.

For the above reasons, the present invention is not anticipated by, and would have not been obvious over, the disclosure of Lwee, and the Examiner is respectfully requested to withdraw the rejection based on the Lwee reference.

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- 8) Referring to section 5 on page 3 of the Office Action, the rejection of claims 1, 2, 5 and 6 as anticipated by US Patent 6,663,407 (Pickles) is respectfully traversed.

Contrary to present independent claim 1, Pickles does **NOT** disclose a combination including a receptacle connector and a plug connector. Instead, Pickles discloses a receptacle-type card edge connector that is to be mounted on a mother board and to receive the raw edge of a daughter circuit board therein. In other words, there is no plug connector at all, because the daughter board is to be plugged directly into the connector (see abstract; col. 1, lines 7 to 24; col. 2, lines 14 to 46; etc.).

Secondly, Pickles does **NOT** disclose a plug connector that is connected to an electric wire or a flat type flexible cable as part of the combination. Instead, Pickles directly engages a rigid daughter board into the connector that is mounted on a rigid circuit board (see abstract; col. 1, lines 7 to 24; col. 2, lines 14 to 46; etc.).

Further, Pickles does **NOT** disclose a plug connector with a plug depth fitting face and a plug width fitting face as defined in present claim 1, because Pickles does not disclose any type or configuration of a plug connector whatsoever.

Contrary to present independent claim 20, Pickles does **NOT** disclose an electrical connection arrangement including both a receptacle connector and a plug connector. As discussed above, Pickles only discloses a receptacle-type card edge connector that directly receives an edge of a rigid daughter board or card, to connect it to a rigid mother board. Thus, Pickles does not disclose any sort of connection arrangement for connecting a

flexible conductor to an article, but only a connection arrangement for connecting a rigid card to a rigid circuit board. Also, Pickles does not disclose any sort of a plug connector at all, because the edge of the circuit card is received directly in the receptacle groove or socket of the receptacle connector.

Further, Pickles does **NOT** disclose a plug body having first and second engaging faces as defined in present claim 20, because Pickles does not disclose any type or configuration of a plug connector in the first place.

For the above reasons, the present invention is not anticipated by, and would not have been obvious over, the disclosure of Pickles, and the Examiner is respectfully requested to withdraw the rejection applying the Pickles reference.

- 9) Referring to section 6 on pages 3 to 4 of the Office Action, the rejection of claims 1 to 8 as obvious over Kajinuma in view of Lwee is respectfully traversed.

Kajinuma discloses a flexible circuit board connecting structure including a terminating structure (120) comprising a conductive supporting plate (150) mounted on the end part (130) of a flexible circuit board (190), as well as a board-mounted connector (20) mounted on a circuit board (5). The connector (20) includes a latch arrangement (32, 52, 53, 55) configured and arranged to engage and hold an end wall (155) at the rear edge of the conductive supporting plate (150). See abstract; col. 1, line 56 to col. 2, line 14; col. 2, lines 53 to 61; col. 3, lines 49 to 65; col. 4, line 23 to col. 5, line 54.

As recognized by the Examiner, the configuration and structure of the latch arrangement according to Kajinuma does not correspond to, and would not have suggested the presently claimed arrangement of latch arms and retaining parts. In this regard, the Examiner has turned to the Lwee reference, which has been discussed above and will be further discussed below in combination with Kajinuma.

Contrary to present independent claim 1, Kajinuma does NOT disclose a plug connector that is connected to an electric wire or a flat type flexible cable. To the contrary, Kajinuma discloses only a conductive supporting plate (150) mounted on the edge of a flexible circuit board (190) to be engaged into a connector (20). The terminating structure (120) comprising the conductive supporting plate (150) does not correspond to the presently claimed plug connector. For example, it does not have a substantially rectangular shape, a contact, and width and depth fitting faces as defined in present claim 1.

Also, the latch structure of Kajinuma does not correspond to the inventive structure as recognized by the Examiner. Even if the different latch arrangement according to Lwee would have been considered in combination with the general structure of Kajinuma the present invention would not have been suggested. As discussed above, the latch arrangement according to Lwee does not include mating or engaging depth fitting faces on the latch arm retaining parts and on the plug body, but instead uses a separate structure (26, 28, 30, 30a) to engage and hold the daughter circuit board in the depth direction. Similarly, Kajinuma also uses an additional holding structure involving

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screw engagement receiving parts (75) of the shell (50) of the connector, as well as aligned holes (161) of the conductive supporting plate (150) with additional screws (105) to securely hold and engage the plugged-in component with respect to the connector (see Figs. 1, 2a, 2b; col. 4, line 1 to col. 5, line 54; etc.). Thus, even a combined reading of Kajinuma and Lwee would not have suggested the features of the present independent claim 1, wherein a retaining part on a width-direction deflectable latch arm holds a plug connector also in the depth direction, and relating to the mating or cooperating depth fitting faces of the receptacle connector and of the plug connector respectively.

Contrary to present independent claim 20, the combination of Kajinuma and Lwee would **NOT** have suggested an electrical arrangement including a receptacle connector and a plug connector as defined in claim 20. For example, particularly, Lwee does not disclose any plug connector, and Kajinuma discloses only the arrangement of a conductive supporting plate (150) on the edge of a flexible circuit board (130, 190). That would not have suggested the presently claimed plug connector comprising a plug body that comprises an insulating plug body part and includes a forward plug end configured and adapted to be inserted into the receptacle socket.

Furthermore, similarly as discussed above, the combination of Kajinuma and Lwee would not have suggested the provision of first and second engaging faces on the plug body as well as first and second retaining faces of the retaining parts on the latch arms of the receptacle connector as defined in present claim 20,

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so as to hold or latch the plug connector in the width and depth directions directly with the retaining parts on the latch arms. The Examiner has acknowledged that the latch arrangement of Kajinuma does not correspond to or suggest the presently claimed latch arrangement, and for the reasons discussed above even the different latch arrangement according to Lwee considered together with Kajinuma would not have suggested the present arrangement.

For the above reasons, the present invention would not have been obvious over Kajinuma in view of Lwee, and the Examiner is respectfully requested to withdraw this rejection.

- 10) Favorable reconsideration and allowance of the application, including all present claims 1, 2, 4, 8 and 12 to 25, are respectfully requested.

Respectfully submitted,

Keiji KURODA et al.
Applicant

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Enclosures:
Term Extension,
Form PTO-2038

By Walter F. Fasse
Walter F. Fasse
Patent Attorney
Reg. No.: 36132
Tel. 207-862-4671
Fax. 207-862-4681
P. O. Box 726
Hampden, ME 04444-0726

CERTIFICATE OF FAX TRANSMISSION:

I hereby certify that this correspondence with all indicated enclosures is being transmitted by telefax to (703) 872-9306 on the date indicated below, and is addressed to: COMMISSIONER FOR PATENTS, P.O. BOX 1450, ALEXANDRIA, VA 22313-1450.

Walter F. Fasse 5/10/05
Name: Walter F. Fasse - Date: May 10, 2005

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